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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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EXAMINER	
TARAE, CATHERINE MICHELLE	
ART UNIT	PAPER NUMBER
3623	

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	02/27/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Office Action Summary	Application No.	Applicant(s)	
	09/971,114	WILLEMS ET AL.	
	Examiner	Art Unit	
	C. Michelle Tarae	3623	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *06 December 2006*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-330* is/are pending in the application.

4a) Of the above claim(s) *118-330* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-117* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

1. The following is a Final Office Action in response to the communication received on December 6, 2006.

Claims 1-330 were previously restricted. Claims 1-117 have been elected without traverse. Claims 118-330 have been withdrawn from further consideration pursuant to 37 CFR 1.142(b) as being drawn to a nonelected invention.

Claims 1, 40, 79 have been amended.

Response to Amendment

2. Applicant's amendments to claims 1, 40 and 79 are acknowledged.

Response to Arguments

3. Applicant's arguments have been fully considered, but are found unpersuasive. In the Remarks, Applicant argues the following: 1) that nothing in Curet teaches use of at least one option representing alternative requirement attributes of the corresponding stage; 2) that Curet does not teach each data set corresponding to an option where each data set includes a first cost and a second cost; and 3) that Curet does not teach determining, based upon said at least one data set, an optimum series of options over a series of said stages by selecting a single option at each stage in said series of said stages that minimizes the sum of total costs over said series of said stages, wherein said total costs is a function of said at least one data set.

In response to argument 1), Examiner respectfully disagrees. The response to this argument is addressed in the updated rejections provided below.

In response to argument 2), Examiner respectfully disagrees. In col. 2, lines 21-31; col. 7, lines 33-55, Curet discloses costs associated with each node, or stage, as well as costs associated with each incoming link/arc to the node and outgoing link/arc from the node. That the costs are associated with the link/arc related to the node is irrelevant since the claims, as currently recited, do not preclude the cost being associated with the link/arc related to the node since the claims recite "each data set including a first cost and a second cost." In other words, "two costs ascribed to an individual node," as argued by Applicant, is not expressly recited in the claims. Furthermore, the costs associated with the links/arcs chosen for traversal to/from the node are costs associated with the node. Additionally, col. 4, lines 48-50, Curet teaches assuming two costs associated with each node and one cost associated with each link/arc. Thus, in Curet, the costs associated with each option include the data sets of the links/arcs that are chosen for traversal. Therefore, Examiner respectfully submits Curet does teach each data set corresponding to an option where each data set includes a first cost and a second cost.

In response to argument 3), Examiner respectfully disagrees. In col. 2, lines 60-64; col. 3, lines 38-43, Curet discloses a path that is determined through a series of nodes, or stages, such that the cost is minimized from the start node to the end node.

Thus, the path represents an optimum series of options (i.e., chosen arcs/links to/from nodes for traversal) over a series of stages (i.e., nodes) such that the cost between the start node and the end node is minimized (i.e., eliminating links and nodes and selecting the minimum-cost cutset). Therefore, Examiner respectfully submits Curet does teach determining, based upon said at least one data set, an optimum series of options over a series of said stages by selecting a single option at each stage in said series of said stages that minimizes the sum of total costs over said series of said stages, wherein said total costs is a function of said at least one data set.

In conclusion, Applicant's arguments have been fully considered, but are found unpersuasive. The rejections have been updated in light of the amendment and provided below.

Claim Rejections - 35 USC § 102

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

5. Claims 1-13, 40-53 and 79-87 are rejected under 35 U.S.C. 102(e) as being anticipated by Curet (U.S. 6,594,624).

As per claim 1, Curet discloses a method comprising:

receiving at least one data set for each of a plurality of interconnected stages, each of the plurality of stages having at least one option representing alternative requirement attributes of the corresponding stage (items 6-9 in Figure 1; Each node is a stage having options to traverse to other nodes via differing links/arcs. Each link/arc is associated with a cost. Thus, each cost for each link represents alternative requirement attributes corresponding to the nodes.), each data set corresponding to an option at the corresponding stage, each data set including a first cost and a second cost (col. 2, lines 21-31; col. 4, lines 48-50; col. 7, lines 33-55; Each cutset includes options for which path to traverse, as well as costs associated with each node, or stage. The first and second cost at each node is the incoming cost and the outgoing cost.); and

determining, based upon said at least one data set, an optimum series of options over a series of said stages by selecting a single option at each stage in said series of said stages that minimizes the sum of total costs over said series of said stages, wherein said total costs is a function of said at least one data set (col. 2, lines 60-64; col. 3, lines 38-43; A path is determined through a series of nodes, or stages, such that the cost is minimized from the start node to the end node.).

As per claim 2, Curet discloses the method of claim 1, further comprising:

transforming said series of said stages into a subgraph of numbered nodes from 1 to N such that each node corresponds to a stage and each node, except a last node N, has only one adjacent node to it that has a higher node number, said one adjacent node having said higher node number being a parent node (col. 1, lines 30-31; col. 5,

lines 30-34; A cutest is traversed where each node is a stage in a path from the source node to the end node.).

As per claims 3-5, Curet discloses the method of claim 2, further comprising:

proceeding in sequential order from node i = 1 to node i = N-1, when the corresponding parent node for node i is downstream thereof:

a) determining the summation of said total costs contributed by node i as a function of first state variables to define first node I costs, said first state variables being a function of said first cost and said second cost over said nodes; b) minimizing the summation of said total costs for the remainder of the nodes that are upstream of node i as a function of said first state variables to define first upstream node i costs; c) minimizing the summation of total costs of the nodes that are downstream and adjacent of node i as a function of said first state variables to define first downstream node if costs; d) summing the first node i costs, first upstream node i costs, and first downstream node i costs to define first minimum total costs for the subgraph rooted at node i; e) minimizing the first minimum total costs for the subgraph rooted at node i over each said option and over a first parameter, said first parameter being of said first state variables (col. 4, lines 45-55; col. 6, lines 25-34 and 54-62; col. 8, lines 1-7; A path is traversed, one node at a time, from the source node to the end node, where cost is determined at each node. A path is selected that minimizes the total cost.).

As per claim 6, Curet discloses the method of claim 5, further comprising:

selecting the option at each node that minimizes the sum of said total costs for the subgraph rooted at each node over said nodes (col. 3, lines 38-40; A minimum cost cutest is determined.).

As per claims 7-13, Curet discloses the method of claim 5, wherein said plurality of first state variables includes a cumulative first cost at a given node, said cumulative first cost being the sum of said first costs of the preceding nodes of at least one option plus the first cost at the given node associated with a corresponding option (col. 8, lines 1-67; The sum of the cost of traversing through all the nodes in a path is determined. The option is the selection of a node to be a part of a path versus another node. The incoming and outgoing costs at each node is calculated and used to determine what node to select for a path.).

Claims 40-53 and 79-87 recite substantially similar subject matter to claims 1-13 above. Therefore, claims 40-53 and 79-87 are rejected on the same basis as claims 1-13 above.

Claim Rejections - 35 USC § 103

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

7. Claims 14-39, 54-78, 88-117 are rejected under 35 U.S.C. 103(a) as being unpatentable over Curet (U.S. 6,594,624) as applied above, and Braun et al. (U.S. 6,341,266).

As per claim 14, while Curet discloses applying its invention to a variety of networks such as telephone, computer and infrastructure networks (col. 1, lines 16-17), Curet does not expressly disclose the method of claim 1, wherein said interconnected stages is a supply chain; each of said plurality of stages represents an operation to be performed; said first cost is a monetary amount associated with performing said operation; and said second cost is an amount of time associated with performing said operation. Braun et al. discloses interconnected stages for a supply chain; each of said plurality of stages represents an operation to be performed; said first cost is a monetary amount associated with performing said operation; and said second cost is an amount of time associated with performing said operation (col. 4, lines 18-29 and 53-55). At the time of the invention, it would have been obvious to a person of ordinary skill in the art for the system of Curet et al. to be used for a supply chain where costs include time and money as disclosed in Braun et al., because the system of Curet et al. is used for a variety of networks, where the networks include interconnected nodes, and a supply chain is a specific type of network, where the nodes include buyers and suppliers. It is common in the supply chain art to select a supply chain that minimizes costs for both suppliers and buyers. Thus, applying the broader teachings of Curet et al. to the supply chain industry allows a user to apply the minimizing costs teachings of Curet et al. to a

supply chain network, thereby enhancing the application of Curet et al. to include a supply chain network.

As per claims 15-16, Braun et al. discloses the method of claim 14, wherein said total costs include manufacturing costs of a given stage; wherein said manufacturing costs at each stage is the product of an average demand for a product at a given stage and the monetary amount associated with each option (col. 3, lines 65-67; col. 4, lines 19-29; col. 5, lines 21-34; col. 6, lines 21-33; The supply chain stages include manufacturing, whose production is based on the demand for an item and whose cost includes meeting the demand within a certain amount of time.). Additionally, it is old and well known that manufacturing is a key component of a supply chain network (Also taught by Braun et al. in col. 3, lines 64-67). At the time of the invention, it would have been obvious to a person of ordinary skill in the art for the network-cost-minimizing teachings of Curet et al. to include specific supply chain aspects including manufacturing costs because, as discussed above, the supply chain network problem is a specific network problem where minimizing costs is one of the main goals (Braun et al.; col. 4, line 67-col. 5, line 1) and where a main cost generator comes from manufacturing (Braun et al.; col. 4, lines 20-25). Since the purpose of the system of Curet et al. is to find the least cost path in a network, it can be applied to a variety of industries' problems where the desire is to minimize cost in a network. Thus, applying the broad teachings of Curet et al. to a specific supply chain network enhances the application of Curet et al.

As per claims 17-21, Braun et al. discloses the method of claim 14, wherein said total costs include inventory costs at a given stage (col. 4, lines 63-67; Inventory is maximized across all the nodes of the network.); said inventory costs include a safety-stock cost, said safety-stock cost being a cost associated with holding stock at a stage to protect against variability (col. 6, lines 35-40; col. 7, lines 1-7); wherein the variability is forecasted demand (col. 4, lines 21-23). The analysis for combining Curet et al. and Braun et al. is provided above in claims 14-16. Additionally, at the time of the invention, it would have been obvious to a person of ordinary skill in the art for the system of Curet et al. to include inventory costs at a given stage when solving to minimize costs for the specific supply chain network problem because inventory costs are well known costs in supply chains (col. 1, lines 23-33) and therefore, considering inventory costs based on demand to minimize the total cost of the selected path in the network would ensure that all relevant cost-affecting data are considered, thus enhancing the comprehensiveness and accuracy of the cost-minimizing solution.

As per claim 22, Braun et al. discloses the method of claim 21, wherein said expected safety-stock at each stage is a maximum demand at each stage over an interval of time minus an average demand over said interval of time (col. 6, lines 36-50; The safety stock is maximized over a period of time based on the demand for that period, minus the average of demand over the period of time.). The analysis for combining Curet et al. and Braun et al. and using inventory and demand is provided above in claims 17-21.

As per claim 23, Braun et al. discloses the method of claim 17, said inventory costs include a pipeline stock cost for each stage, the pipeline stock cost being a cost associated with stock undergoing said operation by the stage but not yet completed (col. 6, lines 53-61; col. 7, lines 10-36; The functions contemplate stock at the manufacturing plants, which are considered to not have any demand, and where the stock is undergoing an operation (i.e., being manufactured), thus the cost is associated with manufacturing. The functions also contemplate stock that is intransit, thus causing distribution centers to become supply sources and having the cost be associated with transportation.). The analysis for combining Curet et al. and Braun et al. and using inventory and demand is provided above in claims 17-21.

As per claims 24-25, Braun et al. discloses the method of claim 23, wherein the pipeline stock cost at each stage is a function of an expected pipeline stock at each stage multiplied by the average cost of the product at a given stage; wherein the expected pipeline stock at each stage is the product of an average demand and said amount of time associated with a corresponding option (col. 7, lines 10-36; The intransit stock includes fixed deliveries, which are an expected pipeline stock.). The analysis for combining Curet et al. and Braun et al. and using inventory and demand is provided above in claims 17-21.

As per claims 26-27, Braun et al. discloses the method of claim 14, wherein said total costs include a time-to-market cost at each stage; wherein said time-to-market cost at each stage is the product of a weighted cost and a longest time path up to and including said amount of time associated with an option at the given stage (col. 4, lines

4-6, 9-10, 20-29 and 53-55; Figures 3-5; The system uses central warehouses, which causes longer delivery times, but lowers cost. Shortest and most cost efficient routes to customers are considered. The system also contemplates transportation costs, which include the time it takes to transport product between nodes of the network, where the time includes the length of the path between nodes.). The analysis for combining Curet et al. and Braun et al. and using inventory and demand is provided above in claims 17-21.

As per claim 28, neither Curet et al. nor Braun et al. expressly discloses the method of claim 14, said monetary amount includes at least one of a direct material cost and a direct labor cost associated with performing said function at said stage. However, Braun et al. discloses determining costs associated with manufacturing (col. 4, lines 1-3), which includes material, and determining costs associated with transportation (col. 4, lines 3-10), which includes labor. At the time of the invention, it would have been obvious to a person of ordinary skill in the art for the combined system of Curet et al. and Braun et al. to have the monetary costs include direct material cost and direct labor cost as each provides a specific picture of where costs are coming from, thus providing detailed and comprehensive information relating to costs.

As per claim 29, Braun et al. discloses the method of claim 14, said amount of time includes at least one of a processing time required to put an item in inventory and a transportation time (col. 4, lines 20-33; Time is calculated for transporting items between nodes of the network.). The analysis for combining Curet et al. and Braun et al. and using inventory and demand is provided above in claims 17-21.

Claims 30-39, 54-78 and 88-117 recite substantially similar subject matter to claims 14-29 above. Therefore, claims 30-39, 54-78 and 88-117 are rejected on the same basis as claims 14-29 above.

Conclusion

8. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

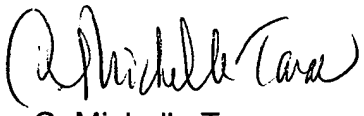
The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

- Poppen (U.S. 5,893,081) discusses using multiple levels of costs for pathfinding computation;
- Jameson (U.S. 6,625,577) discusses a resource allocation model;
- Joshi (U.S. 5,317,566) discusses a least cost route selection; and
- Winner et al. (U.S. 6,278,901) discusses aggregate plans in a manufacturing environment.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to C. Michelle Tarae whose telephone number is 571-272-6727. The examiner can normally be reached Monday – Friday from 8:30am to 5:30pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Tariq Hafiz, can be reached at 571-272-6729.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



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February 20, 2007